

ABSTRACT OF THE DISCLOSURE

A method is disclosed for converting color images to textured monochrome images such that image regions with similar luminance but different chrominance look different when converted to black-and-white to preserve color information therein. This texture-encoded color information can be extracted at a later time to reconstitute the original color image. The present method involves first converting the color image to a luminance-chrominance colorspace. The chrominance data is decomposed into 4 channels of chrominance. A wavelet transformation of the luminance channel is preformed. Scaled chrominance channels are then mapped to a number of wavelet sub-bands. Once mapped, the wavelet transform is inverted to generate textures proportional to the original colors of the color image having an amplitude proportional to the chroma of the original color. The black-and-white image is embedded with this texture information into the image's grayscale component. In order to retrieve the color image from the textured grayscale image, a wavelet transform regenerates the scaled chrominance channels mapped therein. Those wavelet sub-bands comprising embedded chroma are extracted and scaled to the size of the original image. The remaining sub-bands are inverted to produce the Y-image thereof. Separate images now exist in Y, Cr, and Cb. The recombination of the YCbCr images produce the colored image that was previously embedded into the grayscale components of the textured black-and-white image.